

EXPERIENCE THE ESAI POWER DIFFERENCE

Our platform provides fundamental-based outlooks for private equity and infrastructure investors, IPPs & energy traders to make better investment and trading decisions.



ESAI  **POWER**

LONG TERM FORECASTS

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Four Core Strengths of Our Long-Term Market Forecasts

ESAI Power's forecasts are based on detailed supply and demand fundamentals. We keep a close eye on forward curves, tracking the interconnection queues and upcoming power plant retirements and RTO load forecasts. We are transparent with our market assumptions and prepared to explain why our fundamental view may be different from forward curve quotes or activity in the capacity markets. ESAI Power's long-term market forecasts stand apart from other forecast providers due to our four core strengths.



When forecasting the supply curve, particularly the projects in the Interconnection queues, upcoming retirements, and projects at-risk of retirement really matter. Our deep understanding of PJM, NYISO, & ISO-NE and our clear and transparent presentation of our forecasts, underlying assumptions, and market dynamics helps investors and IPPs clearly understand the range of likely scenarios to inform their investment and trading decisions. ESAI Power provides annual and monthly granularity (on- and off-peak, 7x24) in our reports and published outlooks. We can provide hourly granularity if needed but there could be limitations to the usefulness of hourly data from our models depending on the application which we would be happy to discuss.

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Detailed Fundamental Inputs



ESAI Power projections are based on a high level of detail in our fundamental inputs. Our energy models compute annual prices on an 8760-hour basis under full security-constrained dispatch, like the ISO models.

Heat Rate, Output Specs & Transmission Grid Constraints

Our models include all details that impact prices on the grid. For example, every generator has heat rate and output specs (and others) that have been vetted for accuracy against past reported performance. The transmission grid representation and constraints are all accurately modeled (can provide both zonal & nodal detail).

Gas Basis Pricing & Emissions Costs

Additional inputs that impact generation costs are developed in-house. For example, we project gas basis pricing at approximately 15 locations in PJM, NYISO & ISO-NE. We also model emissions costs (e.g., CO₂, SO_x, and NO_x) that affect generator bid profiles.

Detailed Generation Project Outlooks

One aspect of our research that is unique is our Generation Asset Monitor (GAM). We provide a monthly excel database for the probability of completion for all generation projects in development and under construction in the PJM, NYISO, and ISO-NE Interconnection Queues. Retirement outlooks are also included. ESAI's fundamental outlooks are based on a very high level of detail with attention to accuracy.

Transparency of Forecast Assumptions



We are not a black box in terms of our thought process. We ensure the assumptions behind our outlooks are always clear, available, and well-

presented in our research reports. This allows clients to agree/disagree with the assumptions and weigh the impacts on the pricing. We help clients with sensitivities if needed. For example, we may assume that a lot of offshore wind will get built in NYISO, whereas the client's internal outlook may deem that very little will get built. We can help bridge the gap on pricing outcomes between these two outlooks for offshore wind. In contrast, many national forecast providers have forward curves that are just market quotations based on the bids and offers of market participants and therefore, the assumptions behind the forward curves are opaque.

PJM, NYISO, ISO-NE Expertise



Our team has a deep knowledge of the New England, New York, and PJM power markets, having focused on these ISOs for many years. We understand the nuances of market rules and regulations and how changes will affect price outcomes.

ESAI Power's senior analysts have been involved in the Eastern U.S. power markets since the start of deregulation over 20 years ago.

Our reports provide detailed overviews of current market dynamics and upcoming changes that could change pricing outlooks. This is backed by direct 'analyst access' where clients receive additional color on market parameters, rule changes, emerging renewable and emissions regulations, Capacity or RGGI auctions, queries about our market assumptions, and other details that may impact prices.

Assessment of Risks



We publish base case outlooks based on assumptions that, based upon our experience, are the most probable outcomes.

However, there are many risks on the horizon that can alter price outcomes. ESAI Power can assist with assessing these risk outcomes via our analyst access service to entertain questions and impacts of changing assumptions or building an energy gross margin forecast and RTO Market report for specific power plants as part of a consulting project.

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Benchmark Energy Research Coverage Areas

Here are our top research publications, please click the image or the link to learn more.



[Capacity Watch™](#) – provides coverage of the capacity market outlook and regulatory developments for PJM, NYISO, ISO-NE and MISO. ESAI's 10-year forecasts and supporting data in spreadsheet format. Detailed forecasts in advance of each annual auction (PJM, ISO-NE and MISO), or each 6-month Capability Season (NYISO). A pre-auction briefing summarizing all auction parameters, notable rule changes, and ESAI's outlook.

Periodic coverage of important developments in RTO stakeholder processes or FERC proceedings. Research pieces on capacity market design trends, policy issues, supply and demand drivers and other topics.

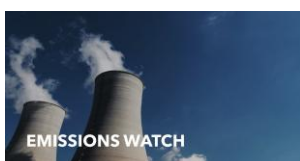


[Energy Watch™](#) – Analysis of market & policy issues affecting energy pricing dynamics over a 10-year period for both power & natural gas sectors. This includes forecasts of pool-wide and zonal energy prices in ISO-NE, NYISO & PJM, including forecasts of fuel inputs. The dynamics of market and policy changes are analyzed and the impacts on energy prices assessed. Reports provide annual 7X24 data resolution. Forecast data includes monthly

On / Off-peak prices for major power and corresponding monthly prices for gas hubs in ISO-NE, NYISO & PJM.



[Renewables Watch™](#) – Provides updates on significant policies (state and federal) facing the PJM, NYISO & ISO-NE renewable energy markets. In addition, inputs to ESAI's Class I REC supply and demand models are updated to provide timely updates to Class I REC forecasts. ESAI also covers federal issues that impact renewable policy and development in the Northeast.



[Emissions Watch™](#) – This contains our outlooks and briefings on the emissions markets. ESAI provides regular updates and analysis on developments in the SO₂, NO_x and CO₂ emissions markets as well as price forecasts for state and regional markets. In addition, regular updates are provided on the RGGI program as well as other state-specific emissions programs.



[Transmission Watch™](#) – An in-depth look at the essential elements driving transmission investment and development. Monitoring the status and projected in-service date of all major transmission projects under development in PJM, NYISO, and ISO-NE including project planning, permitting, and construction. Coverage of transmission planning processes by Northeast RTO and states.



[Generation Asset Monitor™](#) – A monthly database that includes the evaluation of generation projects in the interconnection queues in ISO-NE, NYISO, PJM & MISO. Several important details are tracked for each project, including interconnection queue numbers, permitting status, financing, and / or PPA status. The GAM also tracks and identifies power plant retirements (both announced and at-risk). Data from the GAM is incorporated into our supply assumptions and probability-weighted capacity additions and retirement assumptions for each RTO.

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Our Research Methodology

Energy Asset investment and power trading decisions should always be based upon fundamentally sound inputs and detailed project outlooks. While the demand side of the equation for power market asset valuations and energy & capacity pricing is relatively straightforward, getting the supply side data correct relies upon a detailed and accurate understanding of construction of projects in the queues, likelihood of project completion, and power plant retirements and those at-risk of retirement. Supply forecasts also require a broad understanding of how transmission, congestion, emissions, and renewable energy mandates impact capacity and energy price outcomes.

Benchmark Energy Research

Our Benchmark Energy Research platform provides fundamental-based outlooks for power market investors, IPPs, and power traders to make better investment and trading decisions.

Subscribers receive market updates on important market events such as Capacity Auctions, Emissions and Renewables legislation, plus complete PJM, NYISO, and ISO-NE long term price forecasts for Capacity, Power, Natural Gas, RGGI and Renewable Energy Credits (RECs).

Coverage offers an in-depth and regional view of the PJM, NYISO and ISO-NE energy markets as well as a comprehensive view of capacity, energy, renewables, emissions and transmission issues.



Contact Us

For more information about how we can make a difference for your business, please call Brian Doyle at **+1 (617) 678-7962** or email esaipower@esai.com



About ESAI Power

ESAI Power is a market research and consulting firm that delivers focused analysis of the PJM, NYISO, ISO-NE and MISO wholesale power markets. Since 2003, ESAI has provided market-focused research product content and custom consulting services for Northeast power market participants, including Private Equity & Infrastructure Investors, IPPs, Lenders, Traders, Developers, Investment Bankers, Lawyers and Retail Electricity Suppliers. ESAI Power LLC, 401 Edgewater Place, Suite 640, Wakefield, MA 01880.

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